# Ultra high energy 20H series

**Device Ratings and Characteristics**

| Part No. | Device Marking | Maximum Allowable Voltage | | Varistor Voltage (@1mA) | | | Clamping Voltage @ Test Current (@8/20µs) | | Maximum Energy (@10/1000µs) | Maximum Peak Current (@8/20µs) | Rated Power | Typical Capacitance (@1KHz) | UL 1449 4th ,In @8/20us | Related Standards Symbol |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ACrms(V) | DC(V) | Vn(Vdc) | Min. | Max. | Vc(V) | Ip(A) | (J) | (A) | (W) | (pF) | (KA) | |
| CNR-20H201K | 20H201K | 130 | 170 | 200 | 180 | 220 | 340 | 200 | 200 | 20000 | 1 | 2125 | 10 | □ |
| CNR-20H221K | 20H221K | 140 | 180 | 220 | 198 | 242 | 360 | 200 | 215 | 20000 | 1 | 2000 | | □ |
| CNR-20H241K | 20H241K | 150 | 200 | 240 | 216 | 264 | 395 | 200 | 235 | 20000 | 1 | 1875 | | □ |
| CNR-20H271K | 20H271K | 175 | 225 | 270 | 243 | 297 | 455 | 200 | 275 | 20000 | 1 | 1625 | | □ |
| CNR-20H301K | 20H301K | 195 | 250 | 300 | 270 | 330 | 500 | 200 | 295 | 20000 | 1 | 1500 | | □ |
| CNR-20H331K | 20H331K | 215 | 275 | 330 | 297 | 363 | 550 | 200 | 320 | 20000 | 1 | 1375 | | □ |
| CNR-20H361K | 20H361K | 230 | 300 | 360 | 324 | 396 | 595 | 200 | 350 | 20000 | 1 | 1375 | | □ |
| CNR-20H391K | 20H391K | 250 | 320 | 390 | 351 | 429 | 650 | 200 | 385 | 20000 | 1 | 1375 | | □ |
| CNR-20H431K | 20H431K | 275 | 350 | 430 | 387 | 473 | 710 | 200 | 425 | 20000 | 1 | 1250 | | □ |
| CNR-20H471K | 20H471K | 300 | 385 | 470 | 423 | 517 | 775 | 200 | 450 | 20000 | 1 | 1125 | | □ |
| CNR-20H511K | 20H511K | 320 | 410 | 510 | 459 | 561 | 845 | 200 | 500 | 20000 | 1 | 1000 | | □ |
| CNR-20H561K | 20H561K | 350 | 460 | 560 | 504 | 616 | 915 | 200 | 520 | 20000 | 1 | 938 | | □ |
| CNR-20H621K | 20H621K | 395 | 510 | 620 | 558 | 682 | 1020 | 200 | 590 | 20000 | 1 | 713 | | □ |
| CNR-20H681K | 20H681K | 420 | 560 | 680 | 612 | 748 | 1120 | 200 | 650 | 20000 | 1 | 688 | | □ |
| CNR-20H751K | 20H751K | 465 | 615 | 750 | 675 | 825 | 1235 | 200 | 725 | 20000 | 1 | 663 | | □ |
| CNR-20H781K | 20H781K | 485 | 640 | 780 | 702 | 858 | 1290 | 200 | 725 | 20000 | 1 | 625 | | □ |
| CNR-20H821K | 20H821K | 510 | 670 | 820 | 738 | 902 | 1355 | 200 | 750 | 20000 | 1 | 625 | | □ |
| CNR-20H911K | 20H911K | 550 | 745 | 910 | 819 | 1001 | 1500 | 200 | 815 | 20000 | 1 | 600 | | □ |
| CNR-20H102K | 20H102K | 625 | 825 | 1000 | 900 | 1100 | 1650 | 200 | 900 | 20000 | 1 | 575 | | □ |
| CNR-20H112K | 20H112K | 680 | 895 | 1100 | 990 | 1210 | 1815 | 200 | 950 | 20000 | 1 | 500 | | □ |

**Related Standards**

| Symbols | □ | | |
|---|---|---|---|
| Approval | c UL us | VDE | CQC |

Specifications are subject to change without notice.

**Reliability (Test items comply with customer request)**

| Characteristic | Standard | Test Conditions | Specifications |
|---|---|---|---|
| Robustness of terminations | IEC 60068-2-21<br>Test Ua1 | F = 10 N (d ≤ 0.8 mm), F = 20 N ( d = 1 mm) | $\triangle V_{1mA}/V_{1mA} \leqq \pm 10\%$<br>No visible damage |
| Solderability | IEC 60068-2-20<br>Test Ta (Method 1) | T = 235±5℃, d = 2±0.5s | Approximately≧95% |
| Resistance to soldering heat | IEC 60068-2-20<br>Test Tb<br>(Method 1A) | T = 260±5℃, d = 10±1s | $\triangle V_{1mA}/V_{1mA} \leqq \pm 5\%$<br>No visible damage |
| Shock | IEC 60068-2-27<br>Test Ea | Pulse shape: half-sine. a = 490 m/s2 , d = 11ms. N = 6 x 3 shocks | $\triangle V_{1mA}/V_{1mA} \leqq \pm 5\%$<br>No visible damage |
| Vibration | IEC 60068-2-6<br>Test Fc<br>Method B4 | Frequency range: 10 Hz to 55 Hz ,a = 0.75 mm or 98 m/s2 (whichever is the less), d = 3x2 h | $\triangle V_{1mA}/V_{1mA} \leqq \pm 5\%$<br>No visible damage |
| Needle flame test | IEC 60695-11-5 | Severity: Vertical 10 s | Duration of burning:<br>5 s max. |
| Voltage under pulse condition | IEC 61051-2 | At class current, 8/20μs | As specified in specification |
| Voltage proof | IEC 61051-2 | Metal balls method (4.8.1.2) 2500 V, 60 s | No breakdown or flashover |
| Pulse current<br>- 8/20 μs | IEC 61051-2 | 8/20 μs, 10 times, I peak=0.25*Imax | $\triangle V/V \leqq \pm 10\%$<br>No visible damage |
| Pulse current<br>- 10/1000 μs | IEC 61051-2 | 10/1000 μs, 10 times, Ipeak = 0.0075* Imax | $\triangle V_{1ma}/V_{1ma} \leqq \pm 10\%$<br>No visible damage |
| Combination pulse | IEC 60950-1:2013<br>Annex Q | Additional test: 10 pulses (combination pulse 6KV/3KA), in one direction, 1 per min | $\triangle V_{1mA}/V_{1mA} \leqq \pm 10\%$<br>No visible damage<br>$U \leq 1.1\ U_{initial}$<br>Voltage proof : No breakdown or flashover |
| Rapid change of temperature | IEC 60068-2-14<br>Test Na | N = 5 cycles, d = 30 min , θA = -40±3°C, θB = 85±2°C | $\triangle V_{1mA}/V_{1mA} \leqq \pm 10\%$<br>No visible damage |
| Climatic sequence | IEC 60068-2-2 Test Ba<br>IEC 60068-2-30 Test Db<br>IEC 60068-2-1 Test Aa<br>IEC 60068-2-30 Test Db | Dry heat, Test Ba:16±2h, T = 85±2℃<br>Damp heat, Test Db first cycle :24h, T = 55±2℃<br>Cold, Test Aa :2h, T = -40±3℃<br>Damp heat Test Ba remaining cycles:5 cycle | $\triangle V_{1mA}/V_{1mA} \leqq \pm 10\%$<br>No visible damage<br>$R_{ISO} \geqq 100M\Omega$<br>Voltage proof:No breakdown or flashover |
| Endurance at upper category temperature | IEC 61051-1 (4.21) | T:max temperature as specified , Duration: 1000 h, Voltage: max. a.c. voltage | $\triangle V/V \leqq \pm 10\%$<br>No visible damage<br>$R_{ISO} \geqq 1000M\Omega$<br>$U \leq 1{,}1\ U_{initial}$ |

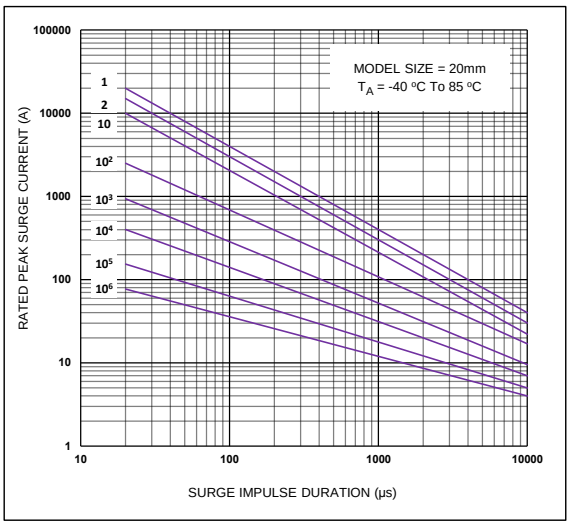
**Reliability**

| Characteristic | Standard | Test Conditions | Specifications |
|---|---|---|---|
| Damp heat (Steady state ) | IEC 60068-2-78 Test Ca $\frac{V_{1ma}\text{at }85^{\circ}C - V_{1ma}\text{at }25^{\circ}C}{V_{1ma}\text{at }25^{\circ}C} \times \frac{1}{60} \times 100(\%/^{\circ}C)$ | T = 40±2℃, RH = 93(+2/-3)%, 56d , 4 specimens:No voltage applied , Other 4 specimens:Applied voltage: 10% of the max. d.c. voltage | $\triangle V_{1ma}/V_{1ma} \leqq \pm 10\%$<br>$R_{ISO} \geqq 100M\Omega$ |
| Maximum Peak Current | Specification Standard | Imax, 8/20 μs, 1 time | $\triangle V_{1ma}/V_{1ma} \leqq \pm 10\%$<br>No visible damage |
| Nominal Discharge Current Test | UL1449 4th | In, 8/20 μs, 15 times, Interval 60s. | $\triangle V/V \leqq \pm 10\%$<br>No visible damage |
| Varistor Voltage Temp. Coefficient | Specification Standard | | -0.05≦TC≦0.05(%/℃) |
| High Temperature Storage | IEC60068-2-2 | 1000h, T = 125±2℃ | $\triangle V/V \leqq \pm 5\%$<br>No visible damage |
| Max. Energy | Specification Standard | 10/1000 μs, 1 time, Max. Energy | $\triangle V/V \leqq \pm 10\%$<br>No visible damage |
| Operating duty cycle test ＊ | UL 1449 | 6 kV/3 kA combination wave surges, phase angle of 90 (+0, -15) degrees, positive polarity 8 times, negative polarity 7 times, interval of 60s. | $\triangle V/V \leqq \pm 10\%$<br>No visible damage |
| Surge Immunity Test＊ | IEC 61000-4-5 | 4kV/2kA combination wave surges, phase angle of 90 (+0, -15) degrees, positive polarity 20times, negative polarity 20 times, interval of 60s. | $\triangle V/V \leqq \pm 10\%$<br>No visible damage |

＊(According to customer requirements to meet the test items)

## Impulse Life Time Rating Curves

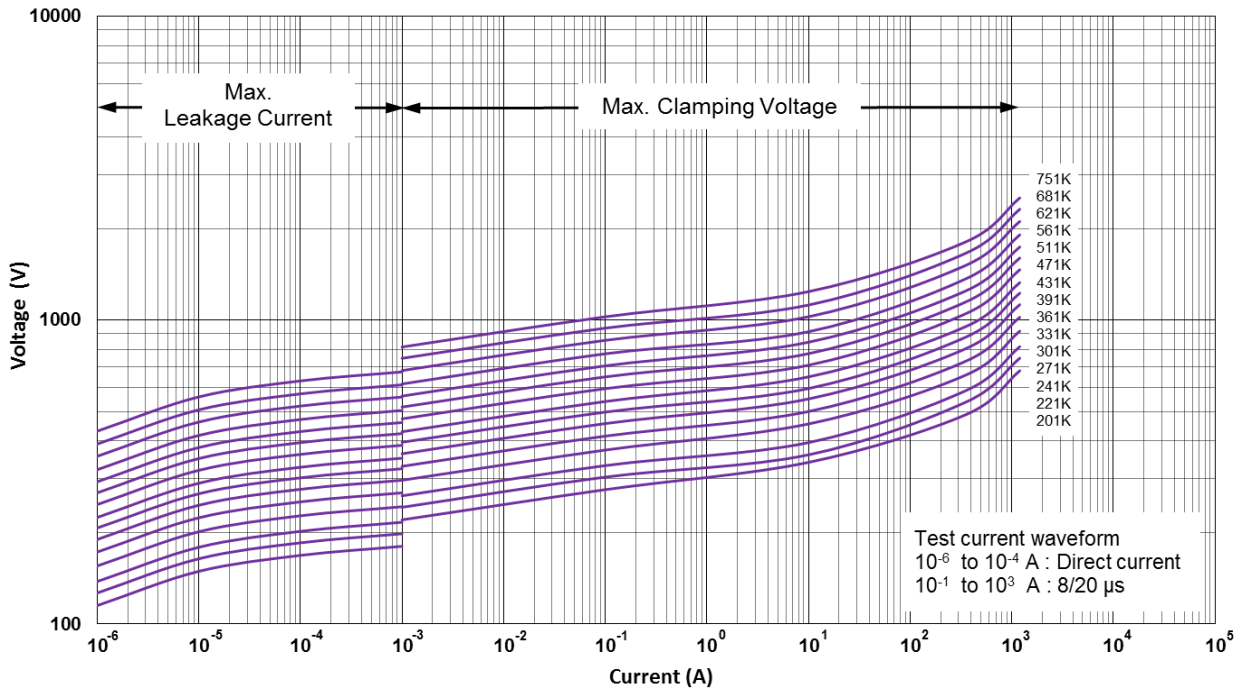
**CNR-20H201K to CNR-20H112K**



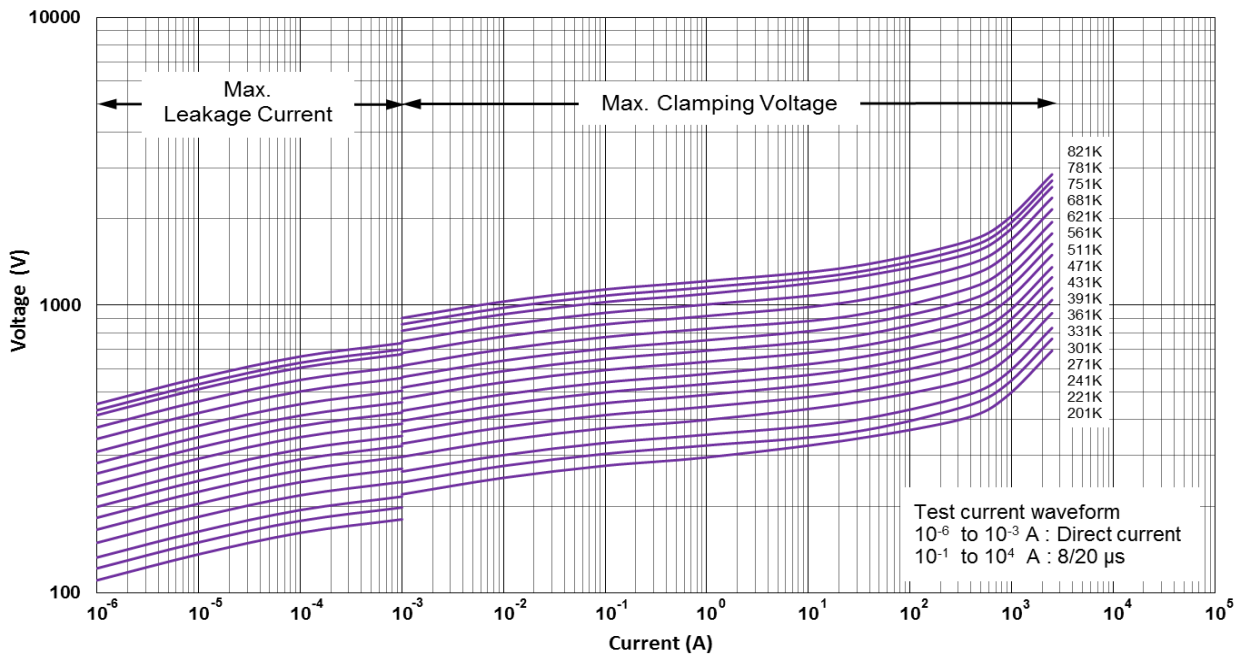


© 2016 CeNtRa Science Corp.

## CNR-05H201K to CNR-05H751K V-I Curves



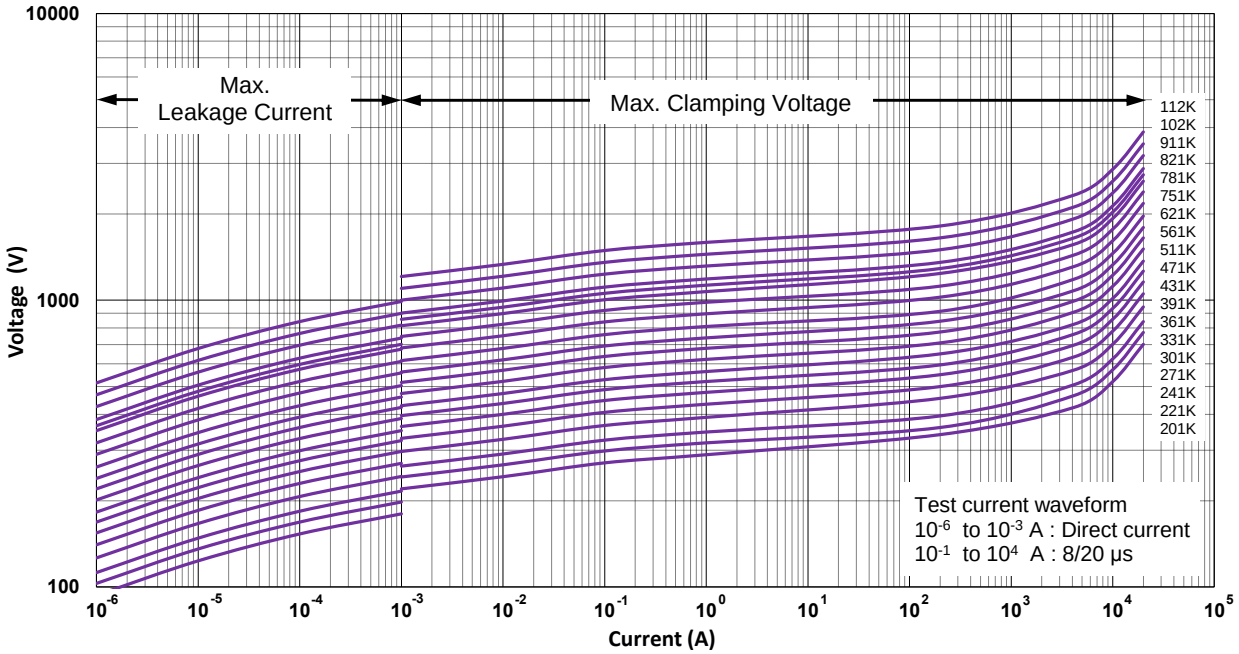

## CNR-07H201K to CNR-07H821K V-I Curves





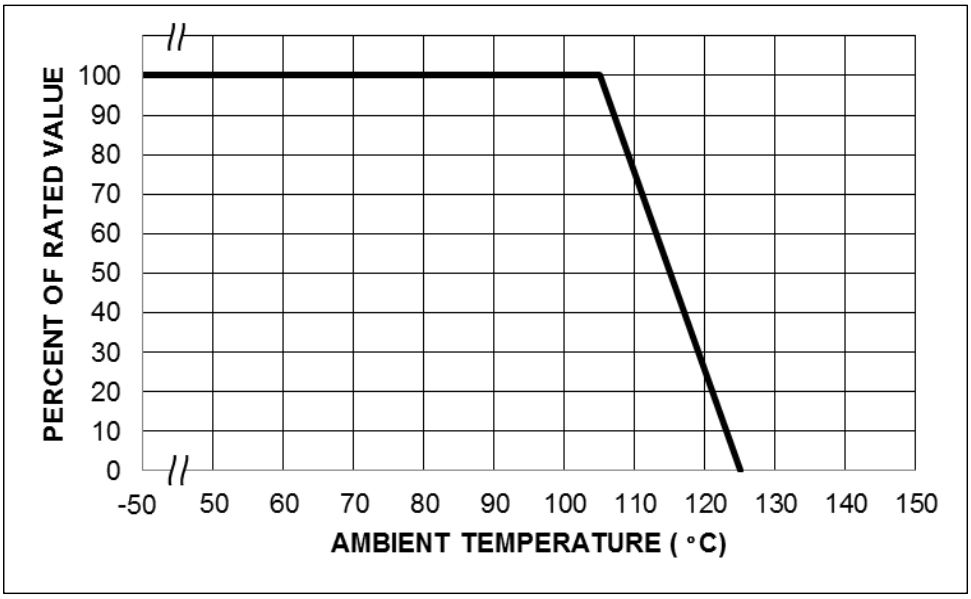
© 2016 CeNtRa Science Corp.

## CNR-20H201K to CNR-20H112K V-I Curves

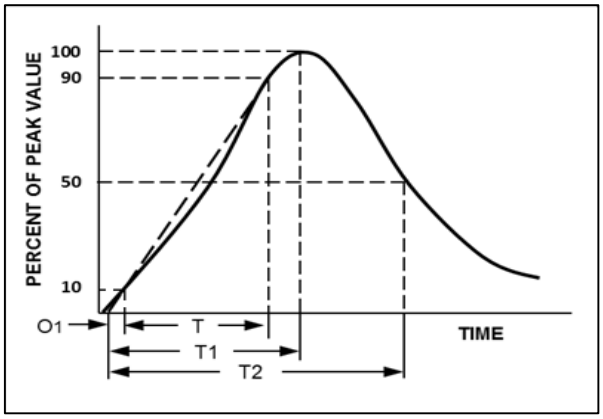


## Power Derating Curve

Should transients occur in rapid succession, the average power dissipation is the energy (watt-seconds) per pulse times the number of pulses per second. The power so developed must be with the specifications shown on the Device Ratings and Specifications Table for the specific device.The operating values of a MOV need to be derated at high temperatures as shown above. Because varistors only dissipate a relatively small amount of average power they are not suitable for repetitive applications that involve substantial amounts of average power dissipation.




## Surge Current Standard Waveform




O1 = Virtual Origin of Wave
T = Time from 10% to 90% of Peak
T1 = Rise Time = 1.25 x T
T2 = Decay Time
Example - For an 8/20 µs Current Waveform:
8µs = T1 = Rise Time
20µs = T2 = Decay Time

## Product Dimensions

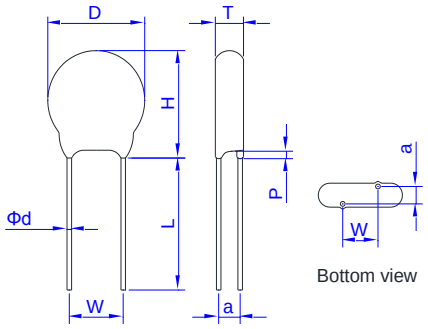



Fig 1. Straight Lead

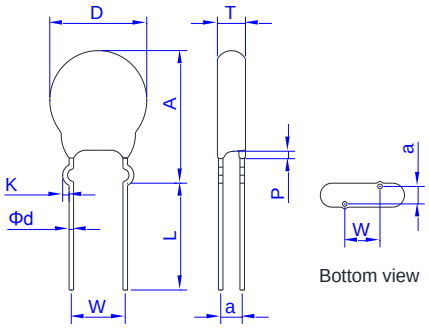



Fig 2. Outside Kink Lead

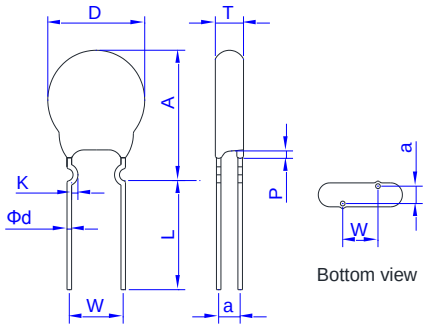



Fig 3. Inside Kink Lead

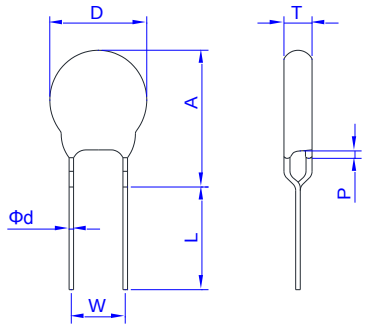



Fig 4. In Line Kink Lead

**Dimension Table** **Unit:mm**

| Symbol \ Model | | 05H | | 07H | | 10H | | 14H | | 18H | | 20H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| D | | 5.5 | 7.5 | 7.5 | 9.0 | 10.5 | 14.0 | 13.5 | 17.5 | 18.5 | 23.0 | 19.5 | 25.0 |
| H | | - | 10.0 | - | 12.0 | - | 17.0 | - | 20.5 | - | 26.0 | - | 28.0 |
| W | | 4.0 | 6.0 | 4.0 | 6.0 | 6.5 | 8.5 | 6.5 | 8.5 | 6.5 | 8.5 | 9.0 | 11.0 |
| Φd | | 0.55 | 0.65 | 0.55 | 0.65 | 0.75 | 0.85 | 0.75 | 0.85 | 0.75 | 0.85 | 0.95 | 1.05 |
| P(max.) | | 3.0 | | | | | | | | | | | |
| L(min) | | 25.0 | | | | | | | | | | | |
| K(Kink Lead) | | 0.8 | 1.6 | 0.8 | 1.6 | 1.0 | 1.8 | 1.0 | 1.8 | 1.0 | 1.8 | 1.0 | 1.8 |
| A(max.) | 180K-271K | - | 13.0 | - | 15.0 | - | 19.5 | - | 22.5 | - | 26.5 | - | 30.0 |
| | >271K | - | 13.0 | - | 15.0 | - | 20.5 | - | 23.5 | - | 27.0 | - | 31.0 |
| T | | See Tmax table | | | | | | | | | | | |

∗Short Cut Lead type TTXX the lead length (L) can 3.0~15mm (expect 20H dia <10mm), see Ordering Note.

∗∗a value see T max. table

**T max. Table** Unit:mm

| Model | 05H | 07H | 10H | 14H | 18H | 20H | a(±1.0) |
|---|---|---|---|---|---|---|---|
| **201K** | 3.9 | 4.0 | 4.5 | 4.6 | 4.6 | 5.1 | 2.0 |
| **221K** | 4.0 | 4.1 | 4.6 | 4.7 | 4.7 | 5.2 | 2.1 |
| **241K** | 4.1 | 4.2 | 4.7 | 4.8 | 4.8 | 5.3 | 2.2 |
| **271K** | 4.4 | 4.5 | 4.8 | 4.9 | 4.9 | 5.4 | 2.3 |
| **301K** | 4.6 | 4.7 | 4.9 | 5.0 | 5.0 | 5.5 | 2.5 |
| **331K** | 4.7 | 4.8 | 5.1 | 5.2 | 5.2 | 5.8 | 2.7 |
| **361K** | 4.8 | 4.9 | 5.4 | 5.5 | 5.5 | 6.0 | 2.8 |
| **391K** | 4.9 | 5.0 | 5.5 | 5.6 | 5.6 | 6.1 | 3.0 |
| **431K** | 5.2 | 5.3 | 5.7 | 5.8 | 5.8 | 6.4 | 3.2 |
| **471K** | 5.4 | 5.5 | 5.9 | 6.0 | 6.0 | 6.6 | 3.4 |

| Model | 05H | 07H | 10H | 14H | 18H | 20H | a(±1.0) |
|---|---|---|---|---|---|---|---|
| **511K** | 5.6 | 5.7 | 6.1 | 6.2 | 6.2 | 6.7 | 3.7 |
| **561K** | 5.8 | 5.9 | 6.3 | 6.4 | 6.4 | 6.9 | 3.9 |
| **621K** | 6.2 | 6.3 | 6.5 | 6.6 | 6.6 | 7.2 | 4.3 |
| **681K** | 6.3 | 6.4 | 6.6 | 6.7 | 6.7 | 7.3 | 4.7 |
| **751K** | 6.5 | 6.6 | 6.8 | 6.9 | 6.9 | 7.5 | 5.1 |
| **781K** | - | 6.9 | 7.2 | 7.3 | 7.3 | 7.9 | 5.2 |
| **821K** | - | 7.2 | 7.4 | 7.5 | 7.5 | 8.1 | 5.4 |
| **911K** | - | - | 7.5 | 7.6 | 7.6 | 8.2 | 5.9 |
| **102K** | - | - | 8.0 | 8.1 | 8.1 | 8.7 | 6.5 |
| **112K** | - | - | 8.9 | 9.0 | 9.0 | 9.3 | 7.1 |

Specifications are subject to change without notice.

## Tape and Reel Specificstions

● Radial devices on tape are supplied with straight leads,kinked leads or in -line leads

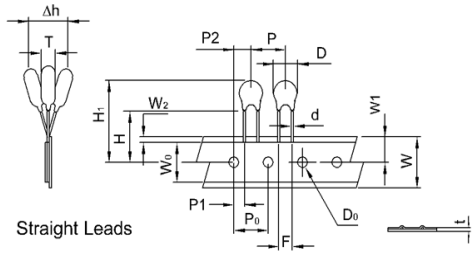


Figure: A

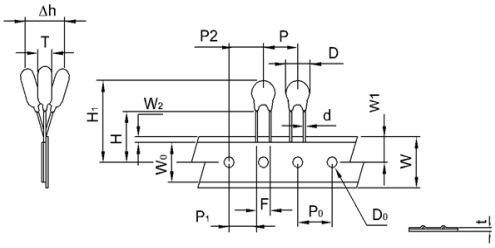


Figure: B

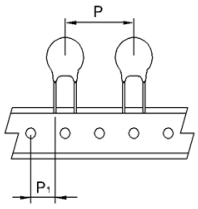


Figure: C

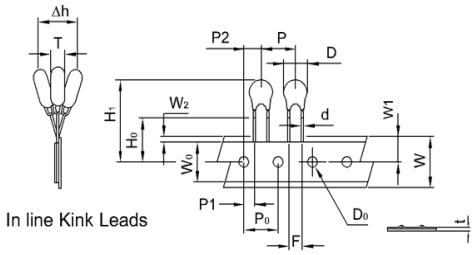


Figure: D

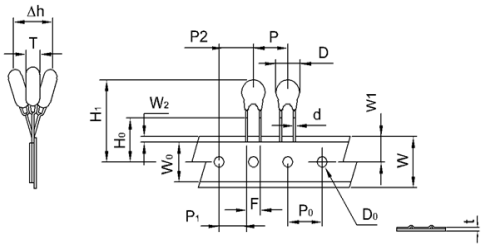


Figure: E

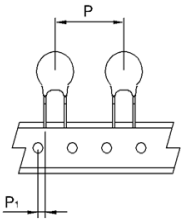


Figure: F

| Symbol | Description | Model Size | | | | | |
|---|---|---|---|---|---|---|---|
| | | 5H | 7H | 10H | 14H | 18H | 20H |
| P | Pitch of Component | 12.7±1.0 | 12.7±1.0 | 12.7±1.0 | 15.0±1.0 | 25.4±1.0 | 30.0±1.0 |
| $P_0$ | Feed Hole Pitch | 12.7±0.2 | 12.7±0.2 | 12.7±0.2 | 15.0±0.2 | 25.4±0.2 | 30.0±0.2 |
| $P_1$ | Feed Hole Center to Pitch | 3.85±0.7 | 3.85±0.7 | 8.95±0.7 | 3.75±0.7 | 8.95±0.7 | 3.75±0.7 |
| $P_2$ | Hole Center to Component Center | 6.35±0.7 | 6.35±0.7 | 12.7±0.7 | 7.5±0.7 | 12.7±0.7 | 7.5±0.7 |
| F | Lead to Lead Distance | 5.0±0.8 | 5.0±0.8 | 7.5±0.8 | 7.5±0.8 | 7.5±0.8 | 7.5±0.8 |
| △h | Component Alignment | 2.0max | 2.0max | 2.0max | 2.0max | 2.0max | 2.0max |
| W | Tape Width | 18.0+1.0 | 18.0+1.0 | 18.0+1.0 | 18.0+1.0 | 18.0+1.0 | 18.0+1.0 |
| | | 18.0-0.5 | 18.0-0.5 | 18.0-0.5 | 18.0-0.5 | 18.0-0.5 | 18.0-0.5 |
| $W_0$ | Hold Down Tape Width | 5.0 Min. | 5.0 Min. | 5.0 Min. | 5.0 Min. | 5.0 Min. | 5.0 Min. |
| $W_1$ | Hole Position | 9.0+0.75 | 9.0+0.75 | 9.0+0.75 | 9.0+0.75 | 9.0+0.75 | 9.0+0.75 |
| | | 9.0-0.5 | 9.0-0.5 | 9.0-0.5 | 9.0-0.5 | 9.0-0.5 | 9.0-0.5 |
| $W_2$ | Hold Down Tape Position | 3.0 Max | 3.0 Max | 3.0 Max | 3.0 Max | 3.0 Max | 3.0 Max |
| H | Height from Tape Center to Component Base | 18.0+2.0 | 18.0+2.0 | 18.0+2.0 | 18.0+2.0 | 18.0+2.0 | 18.0+2.0 |
| | | 18.0-0.0 | 18.0-0.0 | 18.0-0.0 | 18.0-0.0 | 18.0-0.0 | 18.0-0.0 |
| $H_0$ | Seating Plane Height | 16.0±0.5 | 16.0±0.5 | 16.0±0.5 | 16.0±0.5 | 16.0±0.5 | 16.0±0.5 |
| $H_1$ | Component Height | 29.0 Max. | 32.0 Max. | 36.0 Max. | 36.0 Max. | 40.0 Max. | 40.0 Max. |
| $D_0$ | Feed Hole Diameter | 4.0±0.2 | 4.0±0.2 | 4.0±0.2 | 4.0±0.2 | 4.0±0.2 | 4.0±0.2 |
| t | Total Tape Thickness | 0.7±0.2 | 0.7±0.2 | 0.7±0.2 | 0.7±0.2 | 0.7±0.2 | 0.7±0.2 |
| L | Leagth Clipped Lead | 11.0 Max | 11.0 Max | 11.0 Max | 11.0 Max | 11.0 Max | 11.0 Max |
| Figure | | A, D | A, D | B, E | A, D | C | F |

## Tape and Reel Specificstions

● Radial devices on tape are supplied with straight leads,kinked leads or in -line leads

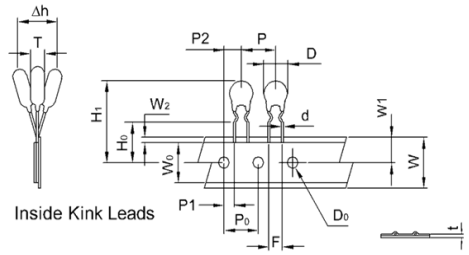


Figure: A

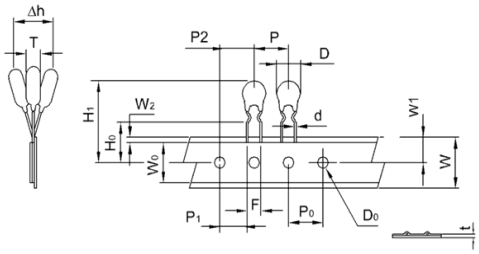


Figure: B

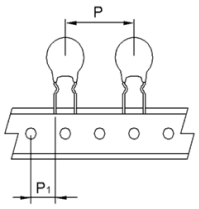


Figure: C

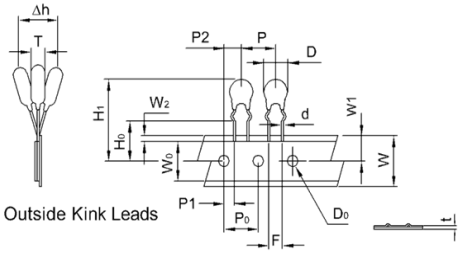


Figure: D

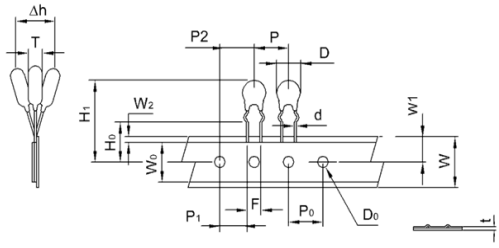


Figure: E

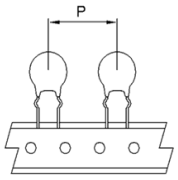


Figure: F

| Symbol | Description | Model Size | | | | | |
|---|---|---|---|---|---|---|---|
| | | 5H | 7H | 10H | 14H | 18H | 20H |
| P | Pitch of Component | 12.7±1.0 | 12.7±1.0 | 12.7±1.0 | 15.0±1.0 | 25.4±1.0 | 30.0±1.0 |
| $P_0$ | Feed Hole Pitch | 12.7±0.2 | 12.7±0.2 | 12.7±0.2 | 15.0±0.2 | 25.4±0.2 | 30.0±0.2 |
| $P_1$ | Feed Hole Center to Pitch | 3.85±0.7 | 3.85±0.7 | 8.95±0.7 | 3.75±0.7 | 8.95±0.7 | 3.75±0.7 |
| $P_2$ | Hole Center to Component Center | 6.35±0.7 | 6.35±0.7 | 12.7±0.7 | 7.5±0.7 | 12.7±0.7 | 7.5±0.7 |
| F | Lead to Lead Distance | 5.0±0.8 | 5.0±0.8 | 7.5±0.8 | 7.5±0.8 | 7.5±0.8 | 7.5±0.8 |
| △h | Component Alignment | 2.0max | 2.0max | 2.0max | 2.0max | 2.0max | 2.0max |
| W | Tape Width | 18.0+1.0 | 18.0+1.0 | 18.0+1.0 | 18.0+1.0 | 18.0+1.0 | 18.0+1.0 |
| | | 18.0-0.5 | 18.0-0.5 | 18.0-0.5 | 18.0-0.5 | 18.0-0.5 | 18.0-0.5 |
| $W_0$ | Hold Down Tape Width | 5.0 Min. | 5.0 Min. | 5.0 Min. | 5.0 Min. | 5.0 Min. | 5.0 Min. |
| $W_1$ | Hole Position | 9.0+0.75 | 9.0+0.75 | 9.0+0.75 | 9.0+0.75 | 9.0+0.75 | 9.0+0.75 |
| | | 9.0-0.5 | 9.0-0.5 | 9.0-0.5 | 9.0-0.5 | 9.0-0.5 | 9.0-0.5 |
| $W_2$ | Hold Down Tape Position | 3.0 Max | 3.0 Max | 3.0 Max | 3.0 Max | 3.0 Max | 3.0 Max |
| H | Height from Tape Center to Component Base | 18.0+2.0 | 18.0+2.0 | 18.0+2.0 | 18.0+2.0 | 18.0+2.0 | 18.0+2.0 |
| | | 18.0-0.0 | 18.0-0.0 | 18.0-0.0 | 18.0-0.0 | 18.0-0.0 | 18.0-0.0 |
| $H_0$ | Seating Plane Height | 16.0±0.5 | 16.0±0.5 | 16.0±0.5 | 16.0±0.5 | 16.0±0.5 | 16.0±0.5 |
| $H_1$ | Component Height | 29.0 Max. | 32.0 Max. | 36.0 Max. | 36.0 Max. | 40.0 Max. | 40.0 Max. |
| $D_0$ | Feed Hole Diameter | 4.0±0.2 | 4.0±0.2 | 4.0±0.2 | 4.0±0.2 | 4.0±0.2 | 4.0±0.2 |
| t | Total Tape Thickness | 0.7±0.2 | 0.7±0.2 | 0.7±0.2 | 0.7±0.2 | 0.7±0.2 | 0.7±0.2 |
| L | Leagth Clipped Lead | 11.0 Max | 11.0 Max | 11.0 Max | 11.0 Max | 11.0 Max | 11.0 Max |
| Figure | | A, D | A, D | B, E | A, D | C | F |

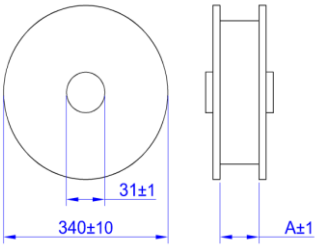
## Packing information

Bulk packing

| Series | Straight Lead Type Quantity(pcs/bag) | Cut Lead Type Quantity(pcs/bag) | Kink Type Quantity(pcs/bag) |
|---|---|---|---|
| CNR-05H | 1000 | 1000 | 1000 |
| CNR-07H | 1000 | 1000 | 1000 |
| CNR-10H | 500 | 500 | 500 |
| CNR-14H | 500 | 500 | 500 |
| CNR-18H | 250 | 250 | 250 |
| CNR-20H | 250 | 250 | 250 |

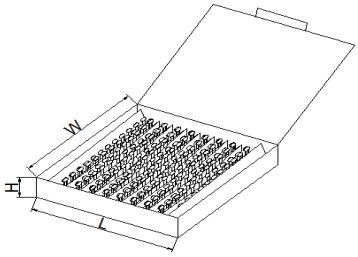
Tape& Reel product packing

| Series | A (mm) | Quantity (pcs/reel) |
|---|---|---|
| CNR-05H(180K~391K)-TRXX | 43 | 2000 |
| CNR-05H(431K~751K)-TRXX | | 1500 |
| CNR-07H(180K~391K)-TRXX | | 2000 |
| CNR-07H(431K~821K)-TRXX | | 1500 |
| CNR-10H(180K~621K)-TRXX | | 1000 |
| CNR-10H(681K~112K)-TRXX | | 800 |
| CNR-14H(180K~391K)-TRXX | 56 | 800 |
| CNR-14(D431K~621K)-TRXX | | 700 |
| CNR-14H(681K~112K)-TRXX | | 600 |



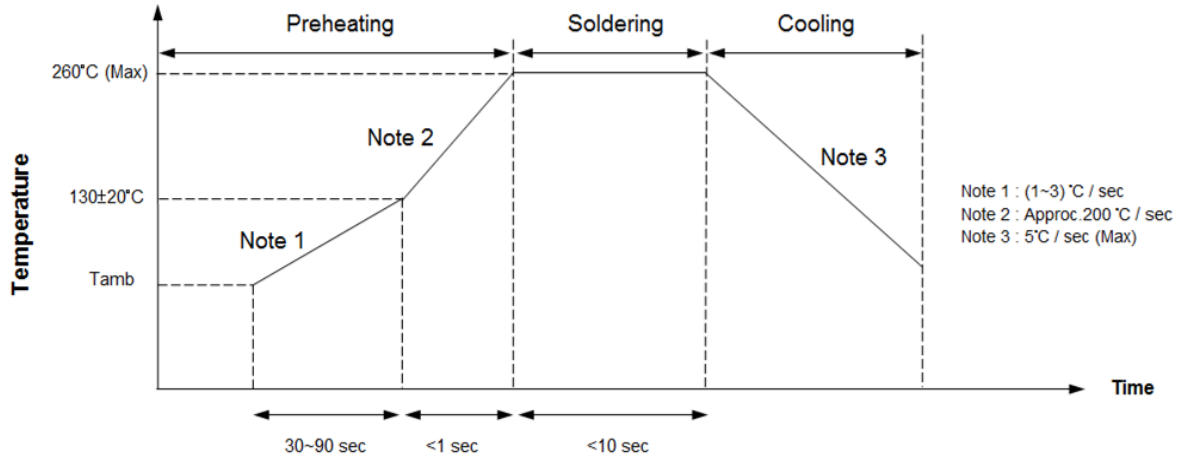

Flat Box product

| Series | Quantity (pcs/box) |
|---|---|
| CNR-05H(180K~621K)-BTXX | 1000 |
| CNR-05H(681K~751K)-BTXX | 800 |
| CNR-07H(180K~621K)-BTXX | 1000 |
| CNR-07H(681K~821K)-BTXX | 800 |
| CNR-10H(180K~621K)-BTXX | 1000 |
| CNR-10H(681K~112K)-BTXX | 800 |
| CNR-14H(180K~621K)-BTXX | 500 |
| CNR-14H(681K~112K)-BTXX | 400 |




| Serise | L±5 | W±5 | H±5 |
|---|---|---|---|
| CNR-05~07H | 340 | 245 | 45 |
| CNR-10~14H | 340 | 245 | 50 |

## Solder Recommendation




## Recommendation Reworking Conditions with Soldering Iron

| Item | Conditions |
|---|---|
| Temperature of soldering Iron-tip | 360℃(Max) |
| Soldering Time | 3 sec(Max) |
| Distance from Varistor | 2mm(Min) |

## RoHS Compliant Declaration

We hereby declare that the components delivered to your company are compliant with RoHS Directive 2002/95/EC

## Storage Conditions of Products

(I) Storage Conditions:

1.Storage Temperature: -10℃~+40℃

2.Relative Humidity:≦75%RH

3.Keep away from corrosive atmosphere and sunlight

4.Solvent Resistance: MIL–STD–202, Method 215F

5.Moisture Sensitivity: Level 1, J-STD-020

(II) Period of Storage: 1 year

## Explanation of Part Numbers

MAIN PART CODES
(See Ratings & Specifications tables and notes below)

| C N R | - | X X | H | 2 0 1 | K |
|---|---|---|---|---|---|

OPTION CODES
(See notes below)

| TTK | XXX |
|---|---|

**Device Family Code**
CeNtRa
Metal Oxide Varistors

**Disc Element Dia.**

05 - Ø 5.0mm 14 - Ø 14mm
07 - Ø 7.0mm 18 - Ø 18mm
10 - Ø 10mm 20 - Ø 20mm

**Type**

D: Standard series
V: Medium surge series
P: High surge series
H: Ultra high energy series
N: High temperature series
C: Automobile series
F: Thermal Cut-off Series
T: Thermal Cut-off with indictor Series

**Tolerance**
K=±10%

**Varistor Voltage**
180=18X10$^0$=18V
181=18X10$^1$=180V
182=18X10$^2$=1800V

For standard parts, use the MAIN PART designator only. For parts with non-standard options (such as additional form, Packing and lead space options), use MAIN PART + OPTION CODE.OPTION CODE items are subject to availability and minimum order requirements. Please contact a Centra products representative for additional information or questions.

## Ordering Notes:

**MAIN PART CODES**

**Series + /Packaging/ Lead Style / Designators:**

Ordering examples:

| Straight Lead Bulk Pack (Standard) | Straight Lead (Short Cut) Bulk Pack | Straight Lead Tape & Reel Pack | Straight Lead Flat Box Pack |
|---|---|---|---|
| CNR-10H471K | CNR-10H471K**TTSXXX** | CNR-10H471K**TRSX** | CNR-10H471K**BTSX** |

| Outside Kink Lead Bulk Pack | Outside Kink Lead (Short Cut) Bulk Pack | Outside Kink Lead Tape & Reel Pack | Outside Kink Lead Flat Box Pack |
|---|---|---|---|
| CNR-10H471**SOK** | CNR-10H471K**TTKXXX** | CNR-10H471K**TRKX** | CNR-10H471K**BTKX** |

| Inside Kink Lead Bulk Pack | Inside Kink Lead (Short Cut) Bulk Pack | Inside Kink Lead Tape & Reel Pack | Inside Kink Lead Flat Box Pack |
|---|---|---|---|
| CNR-10H471K**SIK** | CNR-10H471K**TTIXXX** | CNR-10H471K**TRIX** | CNR-10H471K**BTIX** |

| In Line Kink Lead Bulk Pack | In Line Kink Lead (Short Cut) Bulk Pack | In Line Kink Lead Tape& Reel Pack | In Line Kink Lead Flat Box Pack |
|---|---|---|---|
| CNR-10H471K**SHK** | CNR-10H471K**TTHXXX** | CNR-10H471K**TRHX** | CNR-10H471K**BTHX** |

**Option Code**

+ XXX

| Short Cut Lead Length 10mm±1.0mm |
|---|
| CNR-10H471K**TTS10** |

| Tape & Reel Pack Feed Hole Pitch 15mm±0.2mm |
|---|
| CNR-10H471K**TRSA** |
| CNR-10D471K**TRSB** |

A: $P_0 \rightarrow$ 12.7mm±0.2mm
B: $P_0 \rightarrow$ 15.0mm±0.2mm

CeNtRa H Series varistors are shipped standard in bulk pack with straight leads or Kink lead and lead spacing outlined in the Package Dimensions section of this data sheet. Contact your CeNtRa sales representative to discuss non-standard options.